

## NOTES ON THE GENUS CLERODENDRUM (VERBENACEAE). XVIII

Harold N. Moldenke

### CLERODENDRUM Burm.

Additional & emended bibliography: Chakravert, *Curr. Sci.* 20: 48--49. 1951; Navalkar, *Journ. Bomb. Nat. Hist. Soc.* 50: 157--160. 1951; Sheriar, *Sci. Cult.* 17: 218--219. 1951; Anon., *Biol. Abstr.* 26: 3472. 1952; Chakravert, *Bio. Abstr.* 26: 1750. 1952; Eyster, *Biol. Abstr.* 26: 3141. 1952; Mold., *Biol. Abstr.* 26: 185 & 1471. 1952; Patel, *Biol. Abstr.* 26: 2879. 1952; Pichi-Sermolli, *Biol. Abstr.* 26: 642. 1952; Quaintance, *Biol. Abstr.* 26: 1017. 1952; Sheriar, *Biol. Abstr.* 26: 3184. 1952; Willaman & Schubert, *Agric. Res. Serv. U. S. Dept. Agr. Tech. Bull.* 1234: 236 & 237. 1961; Stoddart & Fosb. in *Stoddart, Biogeogr. Ecol. Seych. Isls.* 232. 1984; Mold., *Phytologia* 60: 56--70. 1986.

Subramanian and his associates (1973) report the presence of the sterol, (24S)-ethylcholesta-5,22,25-triene-3 $\beta$ -ol, in five *Clerodendrum* species (*C. indicum*, *C. inerme*, *C. infortunatum*, *C. phlomidis*, and *C. thomsonae*) and suggest that this sterol may be considered as a possible chemotaxonomic marker for the genus.

### CLERODENDRUM GRANDIFLORUM (Hook.) Schau.

Additional bibliography: Mold., *Suppl. List Inv. Names* 3. 1941; Mold., *Phytologia* 60: 67--70. 1986.

Lemaire (1848) comments regarding this species: "Il est vraiment regrettable que tant de belles plantes, introduites directement en Belgique, sortent ensuite de ce pays pour aller orner les collections étrangères, soit sous des noms erronés et donnés à hâte, soit, mais plus rarement, exacts et dont les jardiniers estropient plus ou moins l'inscription des étiquettes. Dans le premier cas, les expéditeurs ne sont pas excusables: car la Belgique ne manque pas de botanistes distingués qui pourraient déterminer les plantes nouvelles; dans le second, le chef de l'établissement-expéditeur ne l'est pas davantage, car la suscription des étiquettes devrait exercer sa surveillance. Or, l'introduction directe et la détermination de plantes nouvelles est aussi une chose grande et glorieuse pour un pays! Pourquoi donc répudier cette gloire? Ajoutons à ces justes reproches, que le destinataire se plaint avec raison de ne recevoir souvent avec ses plantes aucun renseignement sur leur patrie, etc. Nous pourrions citer une foule de preuves à l'appui de ces observations; nous nous contenterons seulement de faire observer que, c'est surtout de l'autre côté du détroit, qu'en raison des faits que nous signalons, s'exerce souvent une critique assez acerbe contre l'horticulture belge, laquelle dans ces circonstances, cependant, ne fait que tirer les marrons du feu pour les laisser croquer aux autres. Sic vis non vobis....tulit alter honores. Nous espérons bien que ces réflexions, que nous inspirant l'honneur et l'intérêt de notre patrie adoptive, seront acceptées et jugées avec le même esprit qui

nous les a dictées. La plante qui fait le sujet de cet article, a été expédiée (nous dit M. Hooker) par un des établissements les plus distingués de la Belgique, à une maison anglaise sous le nom improprie de *Rondeletia* à fleurs jaunes, et sans autre renseignement. L'absence complète de stipules aurait du tout d'abord démontrer que cette belle plante ne pouvait être une Rubiacée."

Van Houtte (1848) says concerning its cultivation: "Cette espèce, en raison de la lignosité de ses rameaux, demandera des soins assidus en cas de bouturage. Il faudra surtout veiller à en éloigner toute humidité stagnante soit dans la cloche, soit autour des boutures. Comme elle donne facilement des graines, il sera plus commode et plus avantageux de la multiplier par ce moyen. Pour le reste, elle demande la même culture que celle qu'on applique aux autres arbrisseaux de serre chaude. On lui donnez une terre mélangée, mais par la raison que j'ai allégués ci-dessus, on decra le ménager les arrosements, car la plante transpire peu."

The original description given by Turczaninow (1863) for his *Aegiphila aurea* is: "Ae. caule fruticoso tere: i ad nodos tetragono-compresso glabro, tuberculis elevatis aspero; foliis obovato-oblongis, abrupte et breviter acuminatis integerrimis, utrinque glabris coriaceis; panicula terminali folia subaequante; calycis dentibus e basi subquadrata cuspidatis; corolla tenuiter puberula calyce 5--6-tuplo longiore." It is based on J. J. Linden 131 from the province of Havana, Cuba.

His original (1863) description of *Citharexylum longiflorum* is: "Caule tetragono tuberculato glabro aut apice tenuiter puberulo; foliis oppositis breviter petiolatis, per paria interdum approximatis lanceolatis, basi parum attenuatis, in acumen breve abrupte productis, margine revolutis integerrimis, supra glabris viridibus subtus pallidioribus ad nervationes leviter puberulis; panicula terminali folia subaequante; floribus in pedecillis infractis mutantibus; corolla tubo calycis 4--5-plo longiore. Calyx campanulatus, basi nigricans, brevissime 5-dentatus, hirtellus. Corolla tubuloso-infundibuliformis, extus puberula, intus glabra. Filamenta in parte inferiore tubi verticillatim affixa, basi dilatata, parum inaequalia, antheris duplo longiora. Antherae ellipticae, dorso interlocilos affixae, inclusae. Stylus longitudine staminum, filiformis, apice non incrassatus. Species longitudine florum et filamentorum ab omnibus mihi notis diversa." It is based on Sagra 50 from somewhere in Cuba, probably Havana.

*Clerodendron sagraei* was based by Schauer (1847) on Sagra 300, 591, and s.n. also from Havana, Cuba.

Collectors have encountered *C. grandiflorum* growing on hillsides and serpentine barrens, in wooded valleys and forests, on mountains and dry limestone hills, in thickets and oak woods, along streams, and on riverbanks, in flower from October to April and in August, and in fruit in August and from December to February. Alain (1974) asserts that it is endemic to Cuba and there occurs in woods in Havana and Pinar del Río provinces and on the Isle of Pines.

Schauer (1847, in keeping *C. grandiflorum* and *C. sagraei* apart as two separate species, comments about the former: "Videtur a *C. Sagraei* differre tantum foliis basi subcordatis, corollâ paululum majore,

et floribus erectis, si ex vivo ut ex sicco erecti in *C. Sagraei*.' Syngé (1956) says that it was introduced into cultivation in England in 1843 from the West Indies. Roig found it cultivated as an ornamental in Cuba. The corollas are described as having been "yellow" on *Alain & Killip 2008* and *Morton 4274* and by all authors who refer to the color and as "brilliant yellow" on *Ekman 12644*.

Gibbs (1974) reports negative results, with blue fluorescence, from the Juglone test of the leaves, stems, and roots of this plant. Common and vernacular names reported for it are "bois-de-cabri à grandes fleurs", "large yellow-flowered aegiphila", "oviedo", "oviedo amarillo", "oviedo blanco", "oviedo de flor blanca" and "ovieda flor blanca".

It may be noted here that *Alain 488* exhibits especially large leaves. A sheet of *Wright 3176* in the British Museum herbarium consists of a branch with holly-like leaves, re-annotated as probably bignoniaceous, which probably represents a species of *Pseudocarpidium*.

*Alain* (1974) distinguishes the Cuban species of *Clerodendrum* known to him as follows:

1. Spinose shrubs or vines; cymes axillary.....*C. aculeatum*.  
1a. Unarmed shrubs or herbs; cymes axillary or terminal.

2. Large herbs, with broad membranous leaves.

3. Leaf-blades basally deeply cordate; corollas scarlet.....

*C. speciosissimum*.

3a. Leaf-blades basally only shallowly cordate; corollas white.

4. Leaf-blade margins mostly dentate, the teeth large and conspicuous, pilose on both surfaces; corollas doubled.....

*C. philippinum* f. *multiplax*.

4a. Leaf-blades marginally mostly entire or minutely denticulate, glabrescent; corollas simple.....*C. lindleyi*.

2a. Shrubs; leaf-blades mostly narrow, coriaceous.

5. Leaf-blades mostly more than 5 cm. long, apically obtuse or rounded, basally subcordate, marginally entire or with a few irregular teeth.

6. Corollas yellow, pubescent, the limb small, not spreading; leaf-blades mostly obovate or oblanceolate.*C. grandiflorum*.

6a. Corollas white, glabrous or glabrescent, the limb spreading, narrow; leaf-blades obovate to elliptic or oblong-lanceolate.

7. Leaves subsessile or with a petiole to 1 cm. long, the blades mostly basally subcordate.

8. Leaf-blades obovate to oblanceolate, apically mostly obtuse to cuspidate.....*C. cubense*.

8a. Leaf-blades lanceolate to oblong-lanceolate, apically acute to rounded.....*C. nipense*.

7a. Leaves petiolate (the petioles sometimes very short), basally mostly rounded (subcordate in *C. calcicola* and in some forms of *C. lindenianum*).

9. Leaf-blades glabrous on both surfaces or puberulent on only the veins beneath.

10. Inflorescence mostly longer than the subtending

- leaves; peduncles puberulous; cyme-branches verruculose.....*C. lindenianum*.  
 10a. Inflorescence shorter than the subtending leaves; peduncles glabrous; cyme-branches not verruculose....  
*C. anafense*.

9a. Leaf-blades pubescent beneath.

11. Leaf-blades rounded at both ends....*C. tuberculatum*.

11a. Leaf-blades basally subcordate, apically acute or obtuse.....*C. calcicola*.

5a. Leaf-blades 2.3--5.5 cm. long, elliptic or obovate, basally acute, marginally regularly denticulate.....*C. denticulatum*.

A key for distinguishing *C. grandiflorum* from other taxa found in regular cultivation will be found under *C. bethunianum* Low in the present series of notes (58: 198).

The *C. grandiflorum* credited to Gürke by my wife and myself in our 1983 work on Sri Lankan plants, is the result of an unfortunate error in transcription for *C. grandifolium* Gürke, and the *C. grandiflorum* credited by us in the same work to Salisbury is a synonym of *C. serratum* (L.) Moon. The *Clerodendron grandiflorum* Blanco cited by Bakhuizen (1921) and erroneously credited to Blanco, Fl. Filip., ed. 1, 512 (1837) is also an unfortunate error -- Blanco in the reference cited does not propose a binomial in the genus *Clerodendrum*, but *Volkameria grandiflora*, a synonym of *Clerodendrum macrostegium*. The *C. grandiflorum* of H. J. Lam is also a synonym of *C. macrostegium* Schau.

It should perhaps also be noted here that Jackson (1893) erroneously cites the original publication of *C. sagraei* as "Prodr. xi. 6591" instead of to page "695" and mistakenly dates Turczaninow's original description of *Aegiphila aurea* as "1868" instead of "1863". Paxton's 1847 work is also sometimes mistakenly cited as "1841".

Material of *Clerodendrum grandiflorum* has been misidentified and distributed in some herbaria as *C. cubense* Schau., *C. lindenianum* A. Rich., *Aegiphila* sp., and *Rondeletia* sp. On the other hand, some sheets of *Sagra s.n.*, distributed as *C. grandiflorum*, actually are *C. cubense* Schau.

Citations: CUBA: Havana: *Linden 131* (Ld--photo); *Sagra 50* (Ld--photo), *300* [Macbride photos 33934] (Dc F--969738--photo, Kr--photo, N--photo), *502* (P), *591* (Dc, Ld--photo, N--photo), *s.n.* (B, B, F--998438, P, V); *Serre s.n.* [1907] (B, B, Bg). Pinar del Río: *Acuña 10626* (Es, N), *10799* (Es), *16416* (Es), *16417* (Es), *18281* (Es), *18320* (Es); *Acuña & Alain s.n.* [Enero 2-4, 1952] (N); *Alain 110* (Ld), *488* (Ha), *4499* (W--2284635), *6875* (Mi), *s.n.* [León 20091] (Ha, Ha, N, N), *s.n.* [20 Decembre 1943] (Vi); *Alain & Killip 2008* (W--2110007); *C. F. Baker 3806* (B, N, W--523731); *Britton, Wilson, & León 13944* (F--459883, N, W--793598), *14124* (N, N, W--793620, W--793621); *Caldwell & Baker 7143* (B), *7145* (B); *Callardo s.n.* [León 17605] (N); *Charles 4998* (N); *Ekman 10405* (S), *10452* (S), *10495* (N), *12633* (E--photo), *12644* (B, Ld--photo, N--photo, S, W--211346), *16391* (B, S), *16620* (S), *17386* (B, S), *18158* (B, N, S, W--2113460); *León 6024* (Ha, N), *12540* (Ha), *12566* (Ha, N), *12640* (Ha, N), *12901* (Ha, N); *León & Charles 4975* (Ha, N); *León & Roca 7417* (Ha); *León &*

*Victorin 20974* (Ha); *Marie-Victorin 49007* (Um--55106), 58263 (Um--55636); *Morton 4274* (W--1783407); *Roig 1139* (Es, F- 450824); *Roig & Van Hermann 1129* (Es); *Shafer 11909* (B, N, N, W--699518), 11911 (B, N, N, W--699520), 11986 (B, N, N, W--699599); *Van Hermann 3247* (B, Es); *P. Wilson 9207* (N, N). Province undetermined: *Auber s.n.* [Ins. Cuba] (D--612070); *Collector undetermined s.n.*(P); *C. Wright 502* [71; Herb. Sauvalle 1779 in part] (Hv, Hv, Hv, Hv, Hv, Hv), 502/1 [Herb. Sauvalle 1780] (Hv), 3175 in part [Herb. Sauvalle 1779 in part] (Hv), 3176 [1860-1864; Herb. Sauvalle 1780] (B, B, Bm, Ca--937199, Cb, E--118878, G, Hv, Hv, K, L, Ms--30953, Os, P, Pa, S, S, T, V, W--57703, X). ISLA DE PINOS: *Ekman 12503* (B, S). CULTIVATED: England: *Herb. Hooker s.n.* (K--type). MOUNTED CLIPPINGS & ILLUSTRATIONS: Alain in Leon & Alain, Fl. Cuba, imp. 2, 2: 320, fig.138. 1974 (Ld); Hook., Curtis Bot. Mag. 72 [ser. 3, 2]: pl. 4230. 1846 (Ld); Lemaire, Fl. Serres, ser. 1, 4: pl. 324. 1848 (Ld); Unidentified Vol. 13, pl. 154 (N); Urb., Symb. Antill. 6: 68--69. 1909 (S).

*CLERODENDRUM GREVEI* Mold., Amer. Journ. Bot. 38: 324--325. 1951.

Bibliography: Mold., Amer. Journ. Bot. 38: 324--325. 1951; Mold., Biol. Abstr. 26: 185. 1952; Mold. in Humbert, Fl. Madag. 174: 154, 229, 233--234, & 267, fig. 37 (10 & 11). 1956; Mold., Résumé 155 & 450. 1959; G. Taylor, Ind. Kew. Suppl. 12: 36. 1959; Mold., Fifth Summ. 1: 260 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 249 & 537. 1980; Mold., Phytologia 58: 189 (1985) and 59: 346. 1986.

Illustrations: Mold. in Humbert, Fl. Madag. 174: 229, fig. 37 (10 & 11). 1956.

A shrub or tree; branchlets slender, grayish, rather prominently lenticellate, rather densely short-pubescent with twisted hairs on the younger parts, glabrescent in age; nodes more or less annulate; principal internodes 1.3--5.8 cm. long; leaf-scars rather small but borne on large and prominent ascending sterigmata to 3 mm. long on the younger parts; leaves decussate-opposite or ternate; petioles very slender, canaliculate above, about 10 mm. long, densely short-pubescent; leaf-blades submembranous, rather uniformly grayish-green on both surfaces, lanceolate, 6--8 cm. long, 1.5--2.3 cm. wide, apically acuminate, marginally entire, basally attenuate-acute or sub-acuminate, more or less densely short-pubescent above, less so in age except along the midrib, very densely short-pubescent throughout beneath; midrib very slender, very slightly prominulous above, prominulous beneath; secondaries very slender, 4--6 per side, arcuate-ascending, often very slightly subprominulous above, mostly obscured by the pubescence beneath; vein and veinlet reticulation very obscure or indiscernible on both surfaces: inflorescence terminal, cymose, 2--2.5 cm. long, 3--4 cm. wide, composed of numerous rather densely many-flowered cymes forming a very dense, sessile, convex inflorescence, the individual cymes stipitate on peduncle-like stalks that are very slender, to about 1 cm. long, densely short-pubescent like the upper part of the branchlets; bractlets and prophylla linear-setaceous, to about 3 mm. long, strigillose-pilose; pedicels obsolete or to 1 mm. long and pilosulous-pubescent; calyx campanulate, about 3 mm. long, rather sparsely pilose, its rim 4-

lobed, the lobes cuspidate; corolla hypocrateriform, its tube narrow-cylindric, about 7--8 mm. long, externally minutely pulverulent, nigrescent in drying, the limb about 4 mm. wide; stamens and pistil exerted; fruiting-calyx and fruit known only in an immature stage.

The species is based on *Grevé* 223 from somewhere in Madagascar and is deposited in the Paris herbarium. The pubescence and dense terminal inflorescences remind one strongly of *C. emirnense* Bojer. The species is known thus far (to me) only from the original collection.

A key to help distinguish this species from the other known taxa of *Clerodendrum* in Madagascar will be found under *C. baronianum* Oliv. in this present series of notes (58: 189).

Citations: MADAGASCAR: *Grevé* 223 (E--photo of type, F--photo of type, Ld--photo of type, N--fragment of type, N--photo of type, P--type).

*CLERODENDRUM GRIFFITHIANUM* C. B. Clarke in Hook. f., Fl. Brit. India 4: 590 [as "*Clerodendron*"]. 1885; H. Hallier, Meded. Rijks Herb. Leid. 37: 75. 1918.

Synonymy: *Clerodendron griffithianum* C. B. Clarke in Hook. f., Fl. Brit. India 4: 590. 1885.

Bibliography: C. B. Clarke in Hook. f., Fl. Brit. India 4: 590. 1885; Forbes & Hemsli., Journ. Linn. Soc. Lond. Bot. 26: 261. 1890; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 561. 1893; Stapf, Trans. Linn. Soc. Lond., ser. 2, 4: 216 (1894) and ser. 2, 4: 522. 1896; Brandis, Indian Trees, imp. 1, 507 (1906), imp. 2, 507 (1906), and imp. 2a, 507. 1907; Gamble in King & Gamble, Journ. Asiat. Soc. Beng. 74 (2 extra): 830. 1908; Brandis, Indian Trees, imp. 3, 507. 1911; Lévl., Cat. Pl. Yun-Nan 277. 1917; H. Hallier, Meded. Rijks Herb. Leid. 37: 75. 1918; Brandis, Indian Trees, imp. 4, 507. 1921; Rodger in Lace, List Trees Shrubs Burma, ed. 2, 132. 1922; Chung, Mem. Sci. Soc. China 1 (1): 228. 1924; P'ei, Mem. Sci. Soc. China 1 (3): 125 & 153--154. 1932; Kanjilal, Das, Kanjilal, & De, Fl. Assam, imp. 1, 486, 487, & 546. 1939; Biswas, Indian For. Rec. Bot., ser. 2, 3: 41. 1941; E. D. Merr., Brittonia 4: 171. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 54--56 & 90. 1942; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 561. 1946; Mold., Alph. List Inv. Names Suppl. 1: 6. 1947; H. N. & A. L. Mold., Pl. Life 2: 62. 1948; Mold., Alph. List Cit. 2: 501 & 629 (1948), 3: 859 (1949), and 4: 1105. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 124, 126, 128, 131, & 181. 1949; Mold., Resume 159, 161, 165, 169, 264, & 450. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 561. 1960; Hundley & Ko in Lace, Trees Shrubs Burma, ed. 3, 203. 1961; Rao & Joseph, Bull. Bot. Surv. India 7: 149. 1965; Rao & Verma, Bull. Bot. Surv. India 11: 410. 1969; Brandis, Indian Trees, imp. 5, 507. 1971; Mold., Fifth Summ. 1: 267, 272, 282, 287, & 446 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 259, 270, 272, 277, & 537. 1980; Kanjilal, Das, Kanjilal, & De, Fl. Assam, imp. 2, 3: 487. 1982; Mold., Phytologia 58: 404 (1985) and 59: 409. 1986.

A small pubescent tree or large bushy shrub, in habit resembling *C. disparifolium* Blume, but the branches viscous-pubescent; bark

greenish-white, with minute vertical lenticels, 2 mm. thick; blaze greenish; wood white; leaves decussate-opposite; petioles 0.8--2.5 cm. long, viscid-pubescent; leaf-blades membranous, oblong or elliptic to elliptic-lanceolate or lanceolate, 7.5--20 cm. long, 2.5--6 cm. wide, apically acuminate or caudate-acuminate, marginally entire or very obscurely and remotely toothed, basally obtuse to rounded or cuneate, glabrous or glabrate above when mature, minutely pubescent beneath, more densely so on the venation; secondaries 7 or 8 per side; inflorescence terminal or subterminal in the axils of the uppermost leaves, composed of lax, corymbiform-thyrsoid, compound, viscid-pubescent, few-flowered cymes; peduncles penultimate from the axils of stipitate leaf-like bracts; bractlets filiform, about 1.2 cm. long; pedicels filiform, 6--12 mm. long; calyx campanulate, red, about 2.5 cm. long and 12 mm. wide, externally minutely pubescent, deeply 5-lobed, the tube short, the segments or lobes triangular-lanceolate, more or less reddish, 1.5 cm. long, apically acuminate; corolla white or yellow, hypocrateriform, glabrate or glabrescent, the tube 2.5--3.7 cm. long, slender, the lobes oblong, 8--9 mm. long; fruiting-calyx much enlarged, almost or quite enclosing the drupe, the segments triangular, incrassate, erect, about 12 mm. long, overtopping the drupe; fruit drupaceous, ovoid, about 1.2 cm. long and 1.8 cm. wide.

The species is based on *Griffith 6054* from Assam, India, deposited in the Kew herbarium. Clarke (1885) states that the species is also known from Aca in upper Burma. Rao & Joseph (1965) describe it as fairly common at 300 m. altitude in the Northeast Frontier region of India. Kanjilal and his associates (1939) list it from Lakhimpur and Sibsagar in Assam, where, they say, it flowers from January to March and fruits in the "Hot season". Actually the species is native from Assam to Burma and north into Yunnan.

Collectors have encountered this plant in mixed evergreen and deciduous forests and subtropical hill forests, as well as along riversides, at 300--2600 m. altitude, in flower in November to March. On the label accompanying *Ward 155* it is stated that the plant was "in bud for second flowering". The corollas are said to have been "white" on *Keenan & al. 3634 & 3635* and *Ward 109* and "golden-yellow" on *Rock 7844*. Ward reports the plant "scattered but not rare in half-shade in gullies at the edge of jungles" in Burma. Merrill (1941) cites *Ward Vernay-Cutting Exped. 109 & 155* from Upper Burma.

A key for distinguishing *C. griffithianum* from other taxa in this genus growing in Assam is given by Kanjilal and his associates (1939) and this is reproduced here (with modifications and nomenclature updating by me):

1. Inflorescence subterminal.....*C. griffithianum*.
- 1a. Inflorescence terminal.
  2. Corolla-tube more than 7.5 cm. long.
    3. Corolla glabrous; leaf-blades lanceolate, glabrate.*C. indicum*.
    - 3a. Corolla pubescent; leaf-blades hastate, pubescent or vil-  
lous.....*C. hastatum*.
  - 2a. Corolla-tube less than 7.5 cm. long.
4. Inflorescence corymbiform or capitate.

5. Corolla-tube less than 18 mm. long.
6. Leaf-blades dentate; calyx-segments about 12 mm. long.....  
*C. viscosum.*
- 6a. Leaf-blades entire; calyx-segments only about 6 mm. long....  
*C. villosum.*
- 5a. Corolla-tube 2.5 cm. long.
7. Leaf-blades subglabrous, basally shallowly cordate.....  
*C. colebrokianum.*
- 7a. Leaf-blades pubescent or tomentose, basally cuneate or rounded. ....  
*C. lasiocephalum.*
- 7b. Leaf-blades villous or almost woolly beneath, basally cordate to cuneate.....  
*C. bracteatum.*
- 4a. Inflorescence thyrsoïd.
8. Inflorescence erect.
9. Calyx-rim truncate or with very short teeth.
10. Leaves subsessile or with petioles only to 12 mm. long; bracts lanceolate, often whorled.....  
*C. serratum.*
- 10a. Leaves plainly petiolate, the petioles to 3.7 cm. long; bracts ovate, opposite, foliaceous.....  
*C. venosum.*
- 9a. Calyx divided almost to the base.....  
*C. kaempferi.*
- 8a. Inflorescence pendulous.
11. Leaf-blades glabrous; petioles 5--8 mm. long...  
 11a. Leaf-blades sparsely pubescent; petioles to 15 cm. long....  
*C. macrostachyum.*
- Brandis (1906) gives a partial key to the Indian species known to him, including *C. griffithianum*. Because it may also prove helpful, I reproduce it here with modifications and nomenclatural update:
1. Corolla-tube less than 4 cm. long.
2. Cymes axillary.
3. Leaf-blades glabrous or subglabrous.....  
*C. inerme.*
- 3a. Leaf-blades pubescent.....  
*C. phlomidis.*
- 2a. Inflorescence terminal.
4. Inflorescence corymbiform or capitate.
5. Corolla-tube less than 2 cm. long.
6. Leaf-blades marginally entire.
7. Corolla-tube 2--3 times as long as the calyx.  
*C. infortunatum.*
- 7a. Corolla-tube as long as or only slightly longer than the calyx.....  
*C. villosum.*
- 6a. Leaf-blades marginally dentate.....  
*C. viscosum.*
- 5a. Corolla-tube more than 2 cm. long.
8. Cymes umbellate, conspicuously bracteose in pseudo-involucrate fashion, the bracts large, foliaceous, ovate.....  
*C. bracteatum.*
- 8a. Cymes paniculate, the bracts small, not involucrate.
9. Panicle very densely flowered.
10. Panicle corymbose; calyx-teeth small, at most 1 mm. long.....  
*C. colebrokianum.*
- 10a. Panicle subcapitate; calyx-lobes large, triangular-lanceolate, at least 10 mm. long....  
*C. lasiocephalum.*
- 9a. Panicle loosely flowered.....  
*C. garrettianum.*



4a. Inflorescence thyrsoid.

11. Thyrsi erect.

12. Thyrsus elongate; bracts conspicuous; calyx-teeth very short.

13. Leaves and bracts in pairs; petioles at least 2 cm. long; leaf-blades marginally generally subentire; inflorescence at most 15 cm. long.....*C. venosum*.

13a. Leaves and bracts often ternate; petioles obsolete or very short; leaf-blades serrate or denticulate; inflorescence at least 15 cm. long.....*C. serratum*.

12a. Thyrsus lax, pyramidal; calyx divided nearly to the base.

14. Leaf-blades deeply lobed.....*C. paniculatum*.

14a. Leaf-blades merely dentate.....*C. kaempferi*.

11a. Thyrsi drooping or nutant.

15. Corolla pale-blue.....*C. macrostachyum*.

15a. Corolla crimson.

16. Calyx-lobes oblong.....*C. nutans*.

16a. Calyx-lobes broadly ovate.....*C. wallichii*.

1a. Corolla-tube mostly more than 7 cm. long.

17. Leaf-blades basally hastate, pubescent.....*C. hastatum*.

17a. Leaf-blades not hastate, glabrous.....*C. indicum*.

Another key, this one to distinguish *C. griffithianum* from the other Chinese species, will be found under *C. henryi* P'ei in the present series of notes.

P'ei (1936) cites only *Anderson s.n.* and *Forrest 9599* from Yunnan, China, commenting that "This species is related to *Clerodendron trichotomum* Thung. and *C. nutans* Wall. It differs from the former by its oblong acuminate leaves and few flowered cymes, and from the latter by its erect inflorescences which are not elongated, and slender elongated corolla tube which is up to 3.5 cm. in length. It differs from *C. disparifolium* Bl. by its viscous-pubescence on the branches and leaves. Calyx densely pubescent without, glandular within. Corolla densely glandular without with traces of hairs. The axis of the panicle about 4 cm. in length."

Material of *C. griffithianum* has been misidentified and distributed in some herbaria as *C. bracteatum* Wall.

Citations: INDIA: Assam: *Simon s.n.* (Pd). BURMA: Upper Burma: *Griffith 6054* [Rehder photo 2088] (L--isotype, N--photo of type); *Keenan, Aung, & Hla 3634* (Lb--113380), *3635* (Lb--113382); *Kurz 1041* (L); *Rock 7469* (Ca--328488, N, W--1511098); *Shaik Mokin s.n.* [Kachin Hills] (Mu--3735); *F. K. Ward 109* (N), *155* (N). CHINA: Yunnan: *Rock 7844* (W--1511099), *7849* (W--1511733).

CLERODENDRUM GUERKEI J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 308 [as "*Clerodendron*"]. 1900; *B. Thomas, Engl. Bot. Jahrb.* 68: [Gatt. *Clerod.*] 61 & 93 [as "*Gürkei*"] in syn. 1936.

Synonymy: *Clerodendron guerkei* Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 308. 1900. *Clerodendron rotundifolium* Gürke ex J. G. Baker in *Thiselt.-Dyer, Fl. Trop. Afr.* 5: 309 in syn. 1900 [not *C. rotundifolium* Oliv., 1875]. *Clerodendron zambesiicum* Baker in *Thiselt.-*

Dyer, Fl. Trop. Afr. 5: 309. 1900. *Clerodendrum glurkei* Baker apud B. Thomas, Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 61 & 93 in syn. 1936. *Clerodendrum zambesiacum* Baker apud B. Thomas, Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 36, 62, & 93. 1936. *Clerodendron yambesi-*  
*acum* Baker ex Mold., Phytol. Mem. 2: 390 in syn. 1980.

Bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5  
294 & 308--309. 1900; K. Schum., Justs Bot. Jahresber. 28 (1): 495.  
1900; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 43 & 44. 1904; B. Thomas,  
Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 36, 61, 62, 93, & 96. 1936;  
Mold., Prelim. Alph. List Inv. Names 22. 1940; Mold., Known Geogr.  
Distrib. Verbenac., ed. 1, 44, 51, & 90. 1942; Mold., Alph. List  
Inv. Names 21. 1942; Mold., Alph. List Cit. 1: 74 (1946) and 2: 556  
& 614. 1948; H. N. & A. L. Mold., Pl. Life 2: 62. 1948; Mold., Known  
Geogr. Distrib. Verbenac., ed. 2, 116, 120, & 181. 1949; Mold., Ré-  
sume 144, 149, 271, & 450. 1959; Mold., Résumé Suppl. 9: 3. 1964;  
Grout de Beaufort & Schnell, Mem. Inst. Fond. Afr. Noire 75: 41 &  
42. 1966; Mold., Résumé Suppl. 13: 4. 1966; Mold., Fifth Summ. 1:  
235, 249, 251, 446, & 460 (1971) and 2: 777 & 866. 1971; Gibbs,  
Chemotax. Flow. Pl. 3: 1753 (1974) and 4: 2080. 1974; Mold., Phyto-  
logia 0\*: 442 (1974) and 34: 273. 1976; Mold., Phytol. Mem. 2: 218,  
225, 238, 240, 386, 390, & 537. 1980; Mold., Phytologia 57: 346.  
1985.

An erect shrub or small tree, 1--10 m. tall, growing in groups;  
stems single, erect, hollow; sap colorless; branchlets finely hairy;  
leaves decussate-opposite, long-petiolate; leaf-blades moderately  
firm, broadly cordate-ovate, 7.5--15 cm. long, apically acute, mar-  
ginally entire, basally deeply cordate, slightly pubescent above,  
densely pubescent beneath; inflorescence axillary, cymose, the cymes  
lax, forming a small panicle; pedicels sometimes 2.5 cm. long, dense-  
ly pubescent; flowers aromatic; calyx campanulate, very pubescent,  
1.2 cm. long, the lobes ovate, as long as the tube, apically acute;  
corolla hypocrateriform, the tube slender, 10 cm. long, the lobes  
obovate, 1.2 cm. long; stamens much exerted.

This species is based on *Holst 8908a* from Kwa Mshuza, Usambara,  
Tanganyika (Tanzania); *C. zambesiacum* is based on *Buchanan 332* &  
*359* and *Kirk s.n.* from Nyasaland (Malawi), and of these Thomas (1936)  
has designated *Buchanan 359* as the type. For some reason not ob-  
vious to me, he cites *Schlieben 1079* from Tanganyika as a "Cotypus".

Collectors have encountered *C. guerkei* on black loam soil, in  
grass around palm groves, in parkland association vegetation, and in  
dry montane *Albizzia* forests, at 900--1500 m. altitude, in flower in  
February, March, September, and November. Schlieben refers to it as  
abundant or very common in brook valleys in Tanganyika.

The corollas are said to have been "white" on *Schlieben 1759* &  
*2751*, *Tanner 1664*, and *Torre & Paiva 10992*. The wood is reported to  
be used as sticks and posts in Tanganyika. Gibbs reports cyanogene-  
sis absent from the leaves and also secured negative results (with a  
faint blue fluorescence) from the Juglone test of leaves and bark.

Thomas (1936) regards *C. guerkei* as a synonym of *C. rotundifolium*  
Oliv. and cites for *C. zambesiacum* only *Buchanan 359* from Nyasaland  
and *Brehmer 1733*, *Engler 1475*, *Holst 414*, *Holtze 836*, *Schlieben 1079*,

1759, & 2751, Stolz 78, and Stuhlmann 8900 & 9049 from Tanganyika.

The Tanner 1664 collection, cited below, was annotated at Kew as a "pubescent var." of *C. hildebrandtii* Vatke.

Baker (1900) distinguished his *C. guerkei* from *C. zambesiicum* merely by saying that in the former the calyx is "medium-sized", while in the latter it is "large". His key to the non-capitate large-flowered tropical west African species of this genus known to him is as follows:

1. Panicles small.
    2. Leaf-blades oblanceolate-oblong, marginally deeply toothed.....  
*C. incisum.*
    - 2a. Leaf-blades orbicular, not cordate.....*C. rotundifolium.*
    - 2b. Leaf-blades cordate, broadly ovate.
    3. Calyx small.....*C. greyi.*
    - 3a. Calyx medium-sized.
      4. Corolla-tube 1½ inches long.....*C. welwitschii.*
      - 4a. Corolla-tube 4 inches long.....*C. guerkei.*
    - 3b. Calyx large.
    5. Leaf-blades marginally entire.
      6. Leaves finely pubescent.....*C. zambesiicum.*
      - 6a. Leaves velvety.....*C. stuhlmanni.*
    - 5a. Leaf-blades marginally repand.....*C. poggei.*
  - 1a. Panicles large, thyrsoid.....*C. thyrsoidium.*
- [It should be pointed out that, in my opinion, the correct name for what Baker calls *C. greyi* in the above key is *C. speciosissimum* Van Geert, while his *C. zambesiicum* is the same as *C. guerkei* J. G. Baker, *C. stuhlmanni* is *C. rotundifolium* var. *stuhlmanni* (Gürke) Thomas, and *C. poggei* is *C. angolense* Gürke].

The *Habin s.n.* [25/12/1928], distributed as *C. guerkei* actually is *C. rotundifolium* Oliv.

Citations: ZAIRE: Germain 8208 (E--2168593). TANZANIA: Tanganyika: Schlieben 1759 (Br, Mu, N, S), 2751 (B, Br, Ld--photo, Mu, N, N--photo, S); Tanner 1664 (N). MALAWI: Buchanan 332 (L, L, N--photo, W--806806); Stolz 614 (S). MOZAMBIQUE: Niassa: Torre & Paiva 10992 (U1).

CLERODENDRUM HAEMATOLASIVM H. Hallier, Meded. Rijks Herb. Leid. 37: 69--71. 1918.

Synonymy: *Clerodendron haematolasium* Hall. f. apud H. J. Lam, Verbenac. Malay. Arch. 286 & 363. 1919. *Clerodendron haematoplasium* Hall. f. ex E. D. Merrill, Bibl. Enum. Born. Pl. 616. 1921. *Clerodendron macrophyllum* var. *haematolasium* Bakh. in herb.

Bibliography: H. Hallier, Meded. Rijks Herb. Leid. 37: 69--71. 1918; H. J. Lam, Verbenac. Malay. Arch. 286 & 363. 1919; Bakh. in lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 95, 109, & ix. 1921; E. D. Merrill, Bibl. Enum. Born. Pl. 616. 1921; A. W. Hill, Ind. Kew. Suppl. 6: 49. 1926; Mold., Alph. List Inv. Names 17. 1942; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 65 & 90 (1942) and ed. 2, 146 & 181. 1949; Mold., Résumé 192, 193, 264, & 450. 1959; Mold., Fifth Summ. 1: 322 & 446 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 313 & 537. 1980; Mold., Phytologia 50: 253 (1982) and 58:

415. 1985.

An herb or shrub, to 1.7 m. tall, with the habit, leaves, and form of the calyx reminiscent of *C. phyllomega* Steud.; stems [or branches?] terete, 2.5--8 mm. wide, at first densely hirsute with weak, spreading, maroon or rose-purple (finally sordid gray-brown), transversely septate hairs, eventually glabrate and pale-gray; leaves decussate-opposite; petioles 2--9 cm. long, subterete, more or less denticulate at the base and apex, obsoletely sulcate above, densely fuscous-hirsute like the branches; leaf-blades large, membranous, obovate-lanceolate, 11--35 cm. long, 5.5--17 cm. wide, similar in form and indument to *Cyrtandra*, apically more or less long-acuminate, marginally rather remotely and shortly sinuate-dentate except at the very base, basally acute or narrowly subrotundate, shiny dark-green and often covered with epiphytic hepatics above, somewhat less shiny and paler green or violet beneath, pubescent on both surfaces, not at all or only obsoletely glandular-punctulate beneath but larger glands not present; midrib and secondaries more densely bristly-hirsute beneath; vein and veinlet reticulation lax, sharply prominent beneath; inflorescence terminal, paniculate, thyrsoid, to 14 cm. long (including the short peduncles) and 6 cm. wide, densely hirsute like the stems; bracts linear or sublanceolate; pedicels 5--7 mm. long, shorter than or subequaling the calyx; calyx in anthesis herbaceous, 12--14 mm. long, externally shiny bright-red and more or less densely purple-hirsute, internally shiny crystalline greenish-white, deeply 5-fid, the sinuses acute, the lobes 1 cm. long, apically acutely acuminate; corolla hypocrateriform, reddish to rose-purple as in *Rubus odoratus*; fruiting-calyx incrassate, 1.8--2 cm. long, loosely surrounding the drupaceous, green, immature fruit.

This species is based on Hallier B.465, 2628, 2864, 2881, 2885, 2886, 2934, 3019, 3114, & 3151 from western Borneo. Hallier (1918) describes the plant as "Stengel, Blatt- und Blütenstiele, Kelch und Unterseite der Mittel- und Fiedernerven dicht mit *Rubus odoratus*-rothen, im Alter schmutzig braungrauen abstehenden Haaren bedeckt. Blätter weich und krautig, oberseits glänzend dunkelgrün, unterseits etwas schwächer glänzend violett, mit stark vorspringendem weitmaschigen Adernetz und trübgrünem, abstehend borstig roth behaartem Mittelnerve. Der 5-lappige Kelch aussen glänzend lebhaft roth, innen krystakkinisch glänzend weissgrün, bisweilen in's Röthliche spielend, nach der Spitze zu mit zerstreuten, rothen, schräg vorn gerichteten Borsten besetzt, die schwach glasglänzende hellgrüne junge Frucht umschliessend." He also suggests that "an *sylvae pluvialis* pl. cleistogama?" In another place he describes the hairs on the stems, petioles, calyx, and lower leaf-surface as *Amaranthus*-red.

Collectors have found this plant growing on hillsides and in hill-top jungles and humus-rich high forests with *Quercus wilhelmiae* Seem., *Q. argentea* Korth., *Q. pulchra* King, *Q. cyclophora* Endl., *Q. ewyckii* Korth., and *Gardenia anisophylla* var. *polyneura* Valet., at 650--1800 m. altitude, in flower in January, April, May, October, and November, and in fruit in January, May, and November.

The corollas are described as having been "white-yellow" [=yellow-

ish-white?] on Abas SAN.85700, "green covered with red hairs" on Cockburn & Saikel SAN.70030, "cream" on Clemens & Clemens 4967, "greenish-cream" on Clemens & Clemens 26909, and "red like those of *Rubus odoratus*" on Hallier B.465.

Merrill (1921 cites only Hallier 465 & 2934 from Dutch Borneo.

In view of the wide discrepancies in described corolla-color, it is quite possible that two color-forms are here involved.

Material has been misidentified and distributed in some herbaria as *C. disparifolium* var. *kinabaluense* (Stapf) Bakh. and as *Rubiaceae*.

Citations: GREATER SUNDA ISLANDS: Kalimantan: Endert 3210 (Bz--72726), 4423 (Bz--72746); H. Hallier B.465 (Bz--19202--cotype), B.2934 (Bz--19203--cotype, Ca--236924--cotype), B.3151 (Bz--19204--cotype, Ld--photo of cotype, N--cotype, N--photo of cotype). Sabah: Abas SAN.85700 (Sn--54458); M. S. Clemens 10087 (Bz--19201, N--photo); Clemens & Clemens 4967 (Bz--19195), 26909 (Bz--19198, N), 31262 (Bz--19205), s.n. [Jan. 27, '31] (N), s.n. [30.XI.1931] (Bz--19196), s.n. [10.V.1932] (Bz--19197); Cockburn & Saikel SAN.70030 (Sn--35679); Moulton 6698 (Bz--19199); M. Ramos s.n. [Sandakan and vicinity] (Bz--19200).

*CLERODENDRUM HAHNIANUM* Dop in Lecomte, Notul. Syst. 4: 13 [as "*Clerodendron*"]. 1920; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 59 & 90. 1942.

Synonymy: *Clerodendron hahnianum* Dop in Lecomte, Notul. Syst. 4: 13. 1920.

Bibliography: Dop in Lecomte, Notul. Syst. 4: 13. 1920; A. W. Hill, Ind. Kew. Suppl. 6: 49. 1926; Fedde & Schust., Justs Bot. Jahresber. 48 (1): 497. 1927; Dop in Lecomte, Fl. Gen. Indo-chine 4: 851 & 869. 1935; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 59 & 90. 1942; H. N. & A. L. Mold., Pl. Life 2: 62. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 138 & 181. 1949; Mold., Résumé 175 & 450. 1959; Mold., Fifth Summ. 1: 299 (1971) and 2: 866. 1971; Mold., Phytologia 31: 395. 1975; Mold., Phytol. Mem. 2: 288, 386, & 537. 1980; Mold., Phytologia 59: 238, 412, 470, 482, & 483 (1986) and 60: 66. 1986.

A shrub; branches tetragonal, canaliculate, rather densely pubescent; bark red; nodes annulate with an interpetiolar row of lanate hairs; leaves decussate-opposite; petioles stout, 8--12 mm. long, pubescent; leaf-blades chartaceous or subcoriaceous, oblong-lanceolate, arcuate, 5--13 cm. long, 1--2.5 cm. wide, apically acute, marginally entire, basally cuneate, sparsely pilose above, softly villous beneath; midrib prominent; secondaries 12--14, recurved; vein and veinlet reticulation irregular, only slightly distinct; inflorescence axillary and terminal, paniculate, many-flowered, about 25 cm. long and 17 cm. wide, di- or trichotomous, the cymes racemiform; bracts arcuate; bractlets subulate; pedicels 4--8 mm. long; calyx turbinate, herbaceous, green, 5 mm. long, externally villous, the tube 1.5 mm. long, the lobes lanceolate, 3--3.5 mm. long, apically acute; corolla hypocrateriform, 2.5--3 cm. long, externally puberulent, the tube filiform, 1.6--1.7 cm. long, the lobes equal, oblong, 8--13 mm. long; stamens long-exserted; anthers oblong; style slen-

der; stigma shortly bifid; ovary subglobose, externally glabrous; fruiting-calyx accrescent, red; fruit drupaceous, subglobose, 1--2 cm. long, 1--3 cm. wide, black when mature; pyrenes two.

This species is based on an unnumbered Hahn collection from Cambodia and is known thus far (to me) only from the original collection. Dop (1930) says of it "Cette espèce est voisine des *Cl. Godefreyi* O. Ktze et *Cl. Lloydianum* Craib. Elle s'en distingue par le port, les feuilles arquées et la pilosité"; in his 1935 work he distinguishes it from the other Indochinese taxa known to him by the following key (modified and nomenclaturally updated by me):

1. Corolla-tube to 10 cm. long.....*C. indicum*.
- 1a. Corolla-tube only to about 5 cm. long.
  2. Calyx-rim truncate, entire or very shortly denticulate.
    3. Cymes axillary, simple, 3-flowered; leaf-blades marginally entire.....*C. inerme*.
    - 3a. Cymes terminal, paniculate, many-flowered; leaf-blades marginally dentate or denticulate.
      4. Ovary externally velutinous; floriferous stems separate, leafless, 50 cm. long.....*C. subscaposum*.
      - 4a. Ovary externally glabrous; floriferous stems not separate from the others, leafy.....*C. serratum*.
  - 2a. Calyx distinctly dentate or lobed.
    5. Inflorescence terminal, dense, capitate, umbellate, or in many-flowered panicles.
      6. Inflorescence dense, capitate, umbellate, or globular; bracts foliaceous
        7. Calyx with round peltate glands.
          8. Calyx glabrous, puberulent, or pubescent, with only 3--5 peltate glands.
            9. Peltate glands irregularly disposed.
              10. Calyx-lobes triangular, apically acute.
                11. Bracts persistent, longer than the calyx; corolla white or pale-rose.....*C. philippinum*.
                - 11a. Bracts caducous, equaling the calyx; corollas red.....*C. bungei*.
              - 10a. Calyx-lobes large, oval, foliaceous..*C. viscosum*.
            - 9a. One peltate gland at the base of each calyx-tooth...  
*C. colebrokianum*.
          - 8a. Calyx silky-velutinous, with a large number of peltate glands.....*C. villosum*.
        - 7a. Calyx without peltate glands.....*C. canescens*.
      - 6a. Inflorescence loosely paniculate, racemiform, or corymbiform; bracts generally small.
        12. Leaf-blades with rounded glands beneath
          13. Leaf-blades marginally entire or simply dentate.....  
*C. kaempferi*.
          - 13a. Leaf-blades 3--7-lobed.
            14. Lobes triangular, not deeply separated; corolla 2--2.5 cm. long.....*C. paniculatum*.
            - 14a. Lobes linear-oblong, deeply separated; corollas 1.2--1.5 cm. long.....*C. palmatilobatum*.

- 12a. Leaf-blades not glandulose beneath.
15. Flowering calyx membranous, green, externally pubescent or puberulent.
16. Calyx more than 1 cm. long.
17. Corolla puberulent.....*C. longisepalum*.
- 17a. Corolla silky-pubescent.....*C. calamitosum*.
- 16a. Calyx not over 8 mm. long.
18. Leaf-blades glabrous beneath except for the venation.
19. Calyx 7 mm. long; leaf-blades with 14--18 distant secondaries.....*C. garrettianum*.
- 19a. Calyx only 4 mm. long; leaf-blades with 20--32 close secondaries.....*C. tonkinense*.
- 18a. Leaf-blades pubescent or villous beneath.
20. Leaf-blades villous beneath.....*C. hahnianum*.
- 20a. Leaf-blades simply pubescent beneath.
21. Panicles to 40 cm. long; sepals apically acuminate.....*C. finetii*.
- 21a. Panicles not more than 10 cm. long; sepals apically acute.
22. Leaf-blades 10--18 cm. long; corollas 3.5 cm. long. ....*C. godefroyi*.
- 22a. Leaf-blades only 2--3 cm. long; corollas 2--2.3 cm. long.....*C. lloydianum*.
- 15a. Calyx chartaceous or coriaceous, brown, yellow, rose, or red.
23. Calyx-lobes broadly oval-lanceolate; panicles pendent.....  
*C. nutans*.
- 23a. Calyx-lobes triangular-acute.
24. Flowering calyx more than 1 cm. long.
25. Calyx red-lilac; corolla-lobes 8--9 mm. long.....  
*C. petasites*.
- 25a. Calyx not red; corolla-lobes only 5 mm. long.....  
*C. gaudichaudii*.
- 24a. Flowering calyx less than 1 cm. long.
26. Inflorescence loose, corymbiform, the ramifications divaricate.
27. Leaf-blades glabrous beneath.....*C. cyrtophyllum*.
- 27a. Leaf-blades cinereous-velutinous beneath.....  
*C. mandarinorum*.
- 26a. Inflorescence paniculate, longer than wide, racemiform, the ramifications brachiate.
28. Leaf-blades basally acute.
29. Leaf-blades oblanceolate, basally long-attenuate..  
*C. lecomtei*.
- 29a. Leaf-blades oboval, basally simply acute.....  
*C. lanessanii*.
- 28a. Leaf-blades basally truncate, cordate, or hastate.
30. Petioles villous.
31. Panicles 14 cm. long.....*C. schmidtii*.
- 31a. Panicles only 7 cm. long...*C. hastato-oblongum*.
- 30a. Petioles glabrous or glabrescent.

32. Leaf-blades linear-oblong, basally 1-dentate; flowering calyx not red; fruiting-calyx subacrescent.....*C. pierreanum*.
- 32a. Leaf-blades oval or elliptic, toothless; flowering calyx rose or red; fruiting-calyx very much accrescent.
33. Panicles bractless; corollas to 2 cm. long..  
*C. cochinchinense*.
- 33a. Panicles bracteose with persistent foliaceous bracts; corollas 2.5 cm. long.....  
*C. kampoense*.
- 5a. Inflorescence axillary, cymose.
34. Calyx 1.8--2.5 cm. long, not pentagonal.....*C. thomsonae*.
- 34a. Calyx only 1 cm. long, pentagonal.....*C. fortunatum*.
- Nothing is known to me about *Clerodendrum hahnianum* beyond what is given in its bibliography (above).

*CLERODENDRUM HAINANENSE* Hand.-Mazz., Oesterr. Bot. Zeitschr. 80: 343 [as "*Clerodendron*"]. 1931; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 58 & 90. 1942.

Synonymy: *Clerodendron hainanense* Hand.-Mazz., Oesterr. Bot. Zeitschr. 80: 343. 1931. *Clerodendron hainanensis* Hand.-Mazz. in herb.

Bibliography: Hand.-Mazz., Oesterr. Bot. Zeitschr. 80: 343. 1931; A. W. Hill, Ind. Kew. Suppl. 9: 68. 1938; Fedde & Schust., Justs Bot. Jahresber. 59 (2): 416 (1939) and 60 (2): 571. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 58 & 90. 1942; Mold., Alph. List Inv. Names Suppl. 1: 6. 1947; Mold., Alph. List Cit. 2: 634 (1948), 3: 659 (1949), and 4: 1105. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 135 & 181. 1949; Mold., Résumé 174, 264, & 450. 1959; Mold., Fifth Summ. 1: 292 & 446 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 281 & 537. 1980; Mold., Phytologia 59: 238. 1986.

An undershrub, shrub, or small tree, 1--15 m. tall; stems woody, erect, to 3 cm. in diameter; bark pale-yellow; branchlets slender, the younger portions papillose-puberulent, green, finally glabrous and whitish, marked with ochraceous elliptic lenticels; leaves decussate-opposite; petioles rather slender, 1--2 cm. long, sulcate above; leaf-blades chartaceous, obovate-lanceolate, 7--25 cm. long, 2--4 cm. wide, apically acuminate to shortly caudate, marginally entire, basally narrowly cuneate, lustrous, deep-green above, pale-green beneath, glabrous on both surfaces, densely and minutely subpellucid-punctate; midrib prominulent beneath; secondaries slender, 6--11 per side, somewhat oblique and arcuate, paler and prominulent beneath; vein and veinlet reticulation dense, under a handlens in older leaves prominulent above; inflorescence paniculate, terminal, erect, ovoid, 5--12 cm. long, sessile or on peduncles to 4 cm. in length, the ramifications slender, erecto-patent, twice dichotomous; bracts linear, about 5 mm. long, velutinous; pedicels erect, 5--15 mm. long, along with the entire inflorescence papillose-puberulent; flowers fragrant, often arranged laterally or in few-flowered cin-



cinni; calyx campanulate, chartaceous, green or reddish-purple, papillose, the tube short, the lobes ovate-lanceolate, 4 mm. long, apically acute; corolla hypocrateriform, white or cream-color, sometimes pink-tinged, sparsely papillose and glandulose with sessile glands, the tube filiform, to 2 cm. long, the limb when unopened subincurved-pyriform and 8 mm. long, when open with lobes rounded, 4 broadly elliptic, 7 mm. long and 3 mm. wide, the fifth one oblong, 1 cm. long and 4 mm. wide; stamens long-exserted; filaments to 17 mm. long; anthers oblong, to 2 mm. long, pink or purple-spotted; style shorter than the stamens; stigma bilobed, the branches slender; fruiting-calyx deep-purple; fruit drupaceous, at first green, finally black when mature.

This species is based on *Ford 424* collected in Hainan in 1893. Handel-Mazzetti (1931) cites also *Fenzl 93, 100, & 272* from the same island, the first two collected in October to November, 1929, "in regione inferiore silvae primaevae montis Hungmoleng, versus 700 m" and the third "in planitie Bodeng." He comments: "proximum *C. petasites* (Lour.) Moore in Journ. of Bot., LXIII., 285 etiam in prov. Yunnan australi obvium (*Henry 11,585 B*) differt foliis sinuatis et remote denticulatis et calycibus maioribus. Die Form der Korolle stellt diese Art in die Sektion *Siphonanthus*, obwohl sie wesentlich kleiner ist, als bei den anderen hierher gestellten Arten. Auf das Merkmal der Grösse hin wäre die Sektion aber wohl nicht als natürlich zu betrachten."

The species has been found growing in sandy soil of forests, along the margins of streams, in partial or dense shade of forested ravines, in dense forests and light woods, and in shady mixed forests on mountaintops and plains, at altitudes of 500--800 m., in flower in September, October, and December, and in fruit in October, December, and February. Lau reports it "rare in moist loam of thickets on gentle slopes" and "fairly common in clay of thickets on steep dry slopes".

The corollas are said to have been "white" on *How 73992*, *Lau 560*, and *Liang 63444 & 63468*, "cream" or "creamy-white" on *Liang 63178*, and "white and pale-red" on *Liang 66223*.

The *Wang 33299*, distributed as *C. hainanense*, actually is *C. cyrtophyllum* Turcz.

Citations: CHINESE COASTAL ISLANDS: Hainan: *Chun & Tso 43984* (N), *44582* (N, W--1675379); *How 73924* (Bi, S), *73992* (S); *Lau 560* (B, Ca--524971, I, Mi, N, W--1629515), *1081* (N), *2914* (Bi, S); *Lei 170* (N); *Liang 63178* (Mi, Mu, N, S, W--1671013), *63444* (Mi, Mu, N), *63468* (N, W--1671075), *64850* (N), *66191* (Go, N), *66223* (N), *66528* (N, S); *Wang 34193* (N, S, W--1670361), *35242* (Go, N).

*CLERODENDRUM HARMANDIANUM* Dop in Lecomte, Notul. Syst. 4: 13 [as "*Clerodendron*"]. 1920; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 59 & 90. 1942.

Synonymy: *Clerodendron harmandianum* Dop in Lecomte, Notul. Syst. 4: 13. 1920.

Bibliography: Dop in Lecomte, Notul. Syst. 4: 13. 1920; A. W. Hill, Ind. Kew. Suppl. 6: 49. 1926; Fedde & Schüst., Justs Bot. Jah-

resber. 48 (1): 497. 1927; Dop in Lecomte, Fl. Gén. Indo-chine 4: 853 & 882. 1935; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 59 & 90. 1942; H. N. & A. L. Mold., Pl. Life 2: 63. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 136 & 181. 1949; Mold., Résumé 175 & 450. 1959; Mold., Fifth Summ. 1: 299 (1971) and 2: 866. 1971; Mold., Phytologia 31: 395. 1975; Mold., Phytol. Mem. 2: 291, 386, & 537. 1980.

A shrub (?); branches terete, at first finely pubescent, eventually glabrous; bark shiny, light-brown; leaves decussate-opposite; petioles 3--6 cm. long, finely pubescent, apically subulate and 2--3 mm. wide; leaf-blades membranous or herbaceous, obovate, 14--18 cm. long, 4--5 cm. wide, apically short-acuminate, marginally dentate on the upper two-thirds, basally attenuate and slightly decurrent into the petiole, glabrous above, finely pubescent (especially on the venation) beneath; midrib stout; secondaries 8 or 9 per side, very slender, ascending; tertiaries subparallel; veinlet reticulation distinct, conspicuous beneath; inflorescence unknown, except for the immature calyx in bud, which is turbinate, herbaceous, green, externally pubescent, its tube short, the lobes lanceolate, apically acute.

This poorly known species is based on *Harmand 832* from Poulou-Condor, Cochinchina, Vietnam. Because it is so poorly known, Dop has omitted it from his key to the Indochinese taxa of *Clerodendrum* known to him. Nothing is known to me, either, of this plant beyond what is stated in its meager bibliography (above).

*CLERODENDRUM HARNIERIANUM* Schweinf. ex Aschers. in G. Schweinf., Beitr. Fl. Aethiop. 1: 119 [as "*Clerodendron*"]. 1867; B. Thomas, Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 38, 67, & 93. 1936.

Synonymy: *Clerodendron harnierianum* Schweinf. ex Aschers. in G. Schweinf., Beitr. Fl. Aethiop. 1: 119. 1867.

Bibliography: Aschers. in G. Schweinf., Beitr. Fl. Aethiop. 1: 119 & 278. 1867; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 561. 1893; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 293 & 301. 1900; B. Thomas, Engl. Bot. Jahrb. 68: [Gatt. Clerod.] 38, 67, & 93. 1936; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 45 & 90. 1942; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 561. 1946; H. N. & A. L. Mold., Pl. Life 2: 63. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 109 & 181. 1949; Mold., Résumé 132, 133, & 450. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 561. 1960; Mold., Fifth Summ. 1: 209 & 210 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 199, 201, & 537. 1980; Mold., Phytologia 59: 254. 1986.

A small subshrub; branchlets herbaceous, tetragonal; leaves decussate-opposite or ternate, petiolate; leaf-blades membranous, oblong or oblong-lanceolate, about 5 cm. long and 2.5 cm. wide, apically narrowed and acute, basally narrowed, pubescent on both surfaces; inflorescence terminal, paniculate, composed of loose cymes, the ramifications pubescent; pedicels slender, pubescent; calyx campanulate, about 8 mm. long, glabrate, the lobes ovate-lanceolate, as long as the tube, apically very acute; corolla purple, 2--3 times as

long as the calyx, pubescent, the tube 2--2.5 cm. long; anthers roundish.

This species is based on an unnumbered Harnier collection from along the White Nile in Ethiopia, collected in 1861, and one of Cienkowsky from Rosares in Sennar, Sudan, collected on May 8, 1848.

Ascherson (1867) comments that "Die Behaarung wechselt in Dichtigkeit nicht nur bei verschiedenen Theilen der Pflanze, sondern auch bei den Exemplaren. Der Stengel ist entweder kahl und scharfkantig, oder die Kanten desselben sind etwas abgerundet und mehr oder minder behaart. Die Blattlänge überschreitet an meinen Exemplaren nicht 2", die Breite nicht 1" rhein. Der Blattstiel hat  $\frac{1}{2}$ -- $\frac{3}{4}$  der Blattlänge. Die Zuspitzung der Blätter ist vorn und hinten meistens fast gleich, selten an der Basis stumpfer. Sehr verschieden ist die Länge der Blütenstielchen. Dieselbe beträgt an manchen Exemplaren nur  $\frac{1}{4}$ ", bei anderen dagegen erreicht sie 1  $\frac{1}{2}$ ". Der zu Hälfte getheilte Kelch hat eine Gesamtlänge von 9--10 Millim. Die Zipfel sind 2--2 $\frac{1}{2}$  Millim. breit. Die Länge der purpurnen Blütenröhre beträgt  $\frac{3}{4}$  und 1" rhein. Die Staubfäden sind nicht viel kürzer als die Blumenröhre.

"Bemk. Da ich weder unter den afrikanischen noch unter den übrigen Arten dieser Gattung eine fand, welche auch nur im Entferntesten mit der vorliegenden Pflanze verwechselt werden könnte, so entschloss ich mich, obgleich mir kein reichliches Material zu Gebote steht und in Folge dessen oben gegebene Beschreibung vielleicht sehr mangelhaft sein mag, dieselbe zu einer neuen Art zu erheben, welche ich dem Andenken des unglücklichen Nil-Reisenden widme, dessen eifriger Strebsamkeit ein unheilvervolles Jagdgeschick in der Blüthe seiner Jahre ein Ende machte. Die beschriebene Art gehört unstreitig zum §. 1 der Schauerschen Monographie dieser Gattung und ist von allen gekannten Arten durch die wenigen Merkmale, die ich angeführt habe, hinlänglich unterschieden. Das *C. Harnierianum* ist sogar in dem Grade eigenthümlich, dass ich nicht im Stande bin, die nächsten verwandtschaftlichen Beziehungen zu anderen afrikanischen oder indischen Arten anzugeben. *Cl. phlomoides* L. hat zwar der Kelch, *Cl. tomentosum* R. Br. zwar die Corolle, was Grösse und Gestalt anbelangt, mit unsere Art gemein. Allein in allen übrigen Stücken machen sich die stärksten Verschiedenheiten geltend."

Thomas (1936) cites Cienkowsky 188, Figari s.n., and Harnier s.n. from the Sudan, but he places the Cienkowsky collection from near Rosares in Egypt rather than Sudan.

A key to help distinguish this species from some of its tropical African relatives will be found under *C. dinklagei* Gürke in the present series of notes (59: 254).

Nothing is known to me of *Clerodendrum harnierianum* beyond what is given in its sparse bibliography (above).

*CLERODENDRUM HASTATO-OBLONGUM* C. B. Clarke in Schmidt, Bot. Tidsskr. 26: 174 [as "*Clerodendron*"]. 1904; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 60 & 90. 1942.

Synonymy: *Clerodendron hastato-oblongum* C. B. Clarke in Schmidt, Bot. Tidsskr. 26: 174. 1904.

Bibliography: C. B. Clarke in Schmidt, Bot. Tidsskr. 26: 174. 1904; F. N. Williams, Bull. Herb. Boiss., ser. 2, 5: 431. 1905; Prain, Ind. Kew. Suppl. 3: 44. 1908; Dop in Lecomte, Fl. Gen. Indochine 4: 852, 877--878, & 881. 1935; Fletcher, Kew Bull. Misc. Inf. 1938: 428. 1938; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 60 & 90 (1942) and ed. 2, 137 & 181. 1949; Anon., Kew Bull. Gen. Ind. 77. 1959; Mold., Résumé 177 & 450. 1959; Mold., Résumé Suppl. 6: 8. 1963; Mold., Fifth Summ. 1: 446. 1971; Mold., Phytologia 52: 124 & 128 (1982) and 59: 484. 1986.

Clarke's original (1904) description of this species is merely: "Petioli 8 cm. longi. Folii lamina basi truncata hastata. Panicula subglobosa, 6--7 cm. in diam., 12--16 flora. Calycis lobi ovati acuti. Ceteroquin ut *C. Schmidtii*, hujusque forsan var. *umbrosa*, foliis tenuioribus, pedunculo gracillimo. Jungle near Klóng Son, a shrub (No. 692a)." Williams (1905) cites only the type collection.

Shimizu and his associates encountered this plant in tropical rainforests, at 600 m. altitude, in flower in October.

Dop (1935) claims that *C. hastato-oblongum* is also closely allied to *C. geoffrayi* Dop. Fletcher (1938) reduces it to synonymy under *C. schmidtii* and in this disposition of it I concurred in my earlier publications. A key to help distinguish it from most of its Indo-chinese relatives will be found under *C. hahnianum* Dop in the present series of notes (60: 142).

Citations: THAILAND: Shimizu, Toyokuni, Koyama, Yahara, & Santisuk T.18124 (Ac).

CLERODENDRUM HASTATUM Wall. ex Lindl., Edwards Bot. Reg. 16: pl.

1307 [as "*Clerodendron*"]. 1830; Loud., Hort. Brit., ed. 1, 247. 1830.

Synonymy: *Siphonanthus hastata* Roxb., Hort. Beng., imp. 1, 46 nom. nud. 1814; Fl. Indica, ed. 2, imp. 1, 3: 67--68. 1832. *Clerodendron sagittatum* Wall., Numer. List [49], no. 1786 hyponym. 1828. *Clerodendron hastatum* Wall. ex Lindl., Edwards Bot. Reg. 16: pl. 1307. 1830. *Siphonanthus hastatus* Roxb. apud Wall., Numer. List 86, no. 1786. 1831. *Clerodendron hastale* Edgeworth, Pollen, ed. 1, 26, pl. 2 (20). 1877. *Clerodendron hastatum* Lindl. apud C. B. Clarke in Hook. f., Fl. Brit. India 4: 595. 1885. *Clerodendron hastatum* (Roxb.) Lindl. apud Bakh. in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 86. 1921. *Clerodendron hastatum* (Roxb.) Wall. ex Mold., Resumé 159, 161, 216, 264, 268, 341, & 450. 1959. *Clerodendron hastatum* (Roxb.) Lindl. ex Backer & Bakh., Fl. Java 2: 608. 1965.

Bibliography: Roxb., Hort. Beng., imp. 1, 46. 1814; Wall., Numer. List [49], no. 1786. 1829; Lindl., Edwards Bot. Reg. 16: pl. 1307. 1830; Loud., Hort. Brit., ed. 1, 247. 1830; Sweet, Hort. Brit., ed. 2, 415. 1830; Wall., Numer. List 86, no. 1786. 1831; Loud., Hort. Brit., ed. 2, 274. 1832; Roxb., Fl. Indica, ed. 2, imp. 1, 3: 67--68. 1832; W. Hook., Curtis Bot. Mag. 62 [ser. 2, 9]: pl. 3398. 1835; G. Don in Loud., Hort. Brit., ed. 3, 247. 1839; G. Don in Sweet, Hort. Brit., ed. 3, 550. 1839; Steud., Nom. Bot. Phan., ed. 2, 383. 1840; Voigt, Hort. Suburb. Calc. 465. 1845; Walp., Repert. Bot. Syst. 4: 102. 1847; Schau. in A. DC., Prodr. 11: 671. 1847; Buek,

Gen. Spec. Syn. Candoll. 3: 106. 1858; Bocq., *Adansonia*, ser. 1 [Baill., *Rec. Observ. Bot.*], 2: 14, 40, 94, 120, & 144, pl. 8, fig. 26--28 (1862) and ser. 1, 3: 214. 1863; Bocq., *Rév. Verbenac.* 14, 40, 94, 120, & 144, pl. 7. 1863; Firminger, *Man. Gard. India*, ed. 3, 529 & 609. 1874; Roxb., *Fl. Indica*, ed. 2, imp. 2, 480 & 481. 1874; Edgeworth, *Pollen*, ed. 1, 26, pl. 2 (20) (1877) and ed. 2, 26, pl. 2 (20). 1879; C. B. Clarke in Hook. f., *Fl. Brit. India* 4: 595--596. 1885; André, *Rev. Hort.* 65: 60. 1893; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 1, 1: 516 (1893) and imp. 1, 2: 916. 1895; Briq. in Engl. & Prantl., *Nat. Pflanzenfam.*, ed. 1, 4 (3a): 176. 1895; Brandis, *Indian Trees*, imp. 1 & 2, 508 (1906), imp. 2a, 508 (1907), and imp. 3, 508. 1911; Firminger, *Man. Gard. India*, ed. 6, 2: 386--387. 1918; Bakh. in Lam & Bakh., *Bull. Jard. Bot. Buitenz.*, ser. 3, 3: 15, 75, 86--87, 109, & ix. 1921; Brandis, *Indian trees*, imp. 4, 508. 1921; Stapf, *Ind. Lond.* 2: 238. 1930; Rehneit, *Pareys Blumengärtn.*, ed. 1, 280. 1932; B. Thomas, *Engl. Bot. Jahrb.* 68 [Gatt. Clerod.] 9 & 10. 1936; Kanjilal, Das, Kanjilal, & De, *Fl. Assam*, imp. 1, 3: 486, 493, & 546. 1939; Mold., *Geogr. Distrib. Avicenn.* 37. 1939; Mold., *Prelim. Alph. List Inv. Names* 21 & 40. 1940; Biswas, *Indian For. Rec. Bot.*, ser. 2, 3: 41. 1941; Calderon & Standl., *Fl. Salvad.*, ed. 2, 236. 1941; Mold., *Alph. List Inv. Names* 19 & 40. 1942; Mold., *Known Geogr. Distrib. Verbenac.*, ed. 1, 54, 72, & 90. 1942; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 2, 1: 561 (1946) and imp. 2, 2: 916. 1946; Mold., *Alph. List Cit.* 1: 105 & 277. 1946; Mold., *Alph. List Inv. Names Suppl.* 1: 6. 1947; Mold., *Alph. List Cit.* 2: 353, 358, 411, 413, 484, 489, 559, 563, 564, & 631 (1948), 3: 663, 762, 844, 849, & 936 (1949), and 4: 996, 1101, & 1110. 1949; Mold., *Known Geogr. Distrib. Verbenac.*, ed. 2, 124, 126, 158, & 161. 1949; Syngé in Chittenden, *Roy. Hort. Soc. Dict. Gard.*, ed. 2, 1: 505. 1956; Mold., *Résumé* 159, 161, 216, 264, 268, 344, & 450. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, imp. 3, 1: 561 (1960) and imp. 3, 2: 916. 1960; Backer & Bakh., *Fl. Java* 2: 607--608. 1965; Rao & Rabha, *Bull. Bot. Surv. India* 8: 301. 1966; Deb, Sengupta, & Malick, *Bull. Bot. Soc. Beng.* 22: 199 & 210. 1968; Mold., *Résumé Suppl.* 16: 20. 1968; Brandis, *Indian Trees*, imp. 5, 508. 1971; Mold., *Fifth Summ.* 1: 267, 270, 272, 358, 446, 454, 462, & 622 (1971) and 2: 866. 1971; Roxb., *Fl. Indica*, ed. 2, imp. 3, 480 & 481. 1971; Mold., *Phytologia* 34: 269 & 273. 1976; Mold., *Phytol. Mem.* 2: 258, 259, 270, 349, 386, & 537. 1980; Roxb., *Hort. Beng.*, imp. 2, 46. 1980; Kanjilal, Das, Kanjilal, & De, *Fl. Assam*, imp. 2, 3: 486, 493, & 546. 1982; Mold., *Phytologia* 50: 259 (1982) and 58: 197. 1985.

Illustrations: Lindl., *Edwards Bot. Reg.* 16: pl. 1307 (in color). 1830; W. Hook., *Curtis Bot. Mag.* 62 [ser. 2a, 9]: pl. 3398 (in color). 1835; Bocq., *Adansonia*, ser. 1 [Baill., *Rec. Observ. Bot.*], 2: pl. 8, fig. 26--28. 1862; Bocq., *Rév. Verbenac.* pl. 7. 1863; Edgeworth, *Pollen*, ed. 1, pl. 2 (20) (1877) and ed. 2, pl. 2 (20). 1879; André, *Rev. Hort.* 65: pl. 60 (in color). 1893.

An erect, sometimes subarborescent shrub or small tree, 1--5 m. tall; branchlets slender, obtusely tetragonal, densely short-pubescent or hirsute with divergent hairs or eventually merely puberu-

lent, brownish; nodes not annulate, often slightly swollen; principal internodes abbreviated, 1.5--2.5 cm. long; leaves decussate-opposite or ternate, large, numerous, very variable in shape, exstipulate, often very unequally paired (anisophyllous); petioles slender or stout, 2.5--18 cm. long, densely short-pubescent or hirsute with spreading hairs, slightly canaliculate above, often collapsing at both the apex and base in drying, basally somewhat ampliate; leaf-blades membranous, very fragile and brittle when dry, uniformly dark-green on both surfaces or lighter beneath, often tinged reddish or purplish, often brunnescent in drying, very variable in shape, ovate-lanceolate and sagittately or hastately lobed or oblong and hardly angular, 9--30 cm. long, 2.5--25 cm. wide, apically mostly acuminate, marginally mostly rather conspicuously ciliate and hastately or palmately and deeply 3--5-angulate-lobed with the central lobe much the largest, basally mostly deeply (sometimes only shallowly) cordate or triangular-acute into the petiole apex at the mid-point, varying from rather densely spreading-pubescent or spreading-villous on both surfaces with silky multicellular hairs to subglabrous on both surfaces, sometimes scaberulous above, often purplish beneath, the lobes ovate or ovate-oblong and apically mostly acuminate or merely acute; midrib slender or stout, flat above, prominent beneath (especially heavy basally on larger leaves); secondaries slender, 4--9 per side, arcuate-ascending, the 2 lowest basal, those entering the lobes straight and extending to their very tip, all mostly flat above and prominent beneath; veinlet reticulation firm, rather sparse, usually not conspicuous; inflorescence terminal and axillary in the uppermost leaf-axils, forming a large, broad, terminal, cymose or corymbiform panicle to 20 cm. long and wide (or larger if during anthesis the corolla length is included); peduncles 2--4.5 cm. long, densely hirsute-pubescent like the branchlets; sympodia and inflorescence ramifications also densely hirsute-pubescent; bracts scattered in the inflorescence, foliaceous, long-stipitate, usually elliptic, 2--6 cm. long, 7--12 mm. wide, apically acuminate, hirsute-pubescent like the leaf-blades; bractlets and prophylla numerous, linear or narrowly elliptic, 1--1.5 cm. long, rapidly diminishing in size upwards, pubescent; pedicels very slender, 1--2 cm. long, more or less sparsely hirsute-pubescent with glandular-capitate multicellular hairs; flowers numerous, fragrant; flower-buds white; calyx campanulate, 1.5--2.5 cm. long, somewhat inflated, dull greenish-white suffused with red, externally glabrous or subglabrous, 5-parted to below the middle, the lobes ovate-oblong, purple, about 1 cm. long, apically acute; corolla hypocrateriform, white or cream-color, the tube slender, 10--15 cm. long, about 5 mm. wide, ampliate and inflated apically from the point of stamen insertion, straight or recurved in various angles depending on age, externally spreading-villous, the throat finely purple-dotted, the limb to 4 cm. wide during full anthesis, the lobes oblong or sub lanceolate, 1.5--3 cm. long, 4--5 mm. wide, tortuous, eventually reflexed, glabrous or subglabrous, dorsally with numerous sessile glands; stamens didynamous, inserted in the corolla tube near its mouth; filaments smooth, the enclosed portion white,

the exposed portion purple; anthers incumbent; style equaling the corolla; stigma bifid, its lobes spreading, apically acute; ovary ovate, tetragonal, 5-celled; ovules solitary in each cell; fruiting-calyx much accrescent, red or dark-red; fruit drupaceous, obovate, 1.5--1.7 cm. long and wide, shiny, deep-purple or bluish-black to purplish-black, externally glabrous, apically 4-lobed, succulent, 4-celled (or with 1--3 cells aborted); seeds solitary; endosperm absent; cotyledons obovate, fleshy; radicle inferior, roundish.

Collectors have found this very distinctive plant growing in forests, at 270--1300 m. altitude, in flower from April to June. Kanjilal and his associates (1939) assert that in Assam it fruits in the "cold season".

Lindley (1830) comments that "this is a very handsome shrub while in flower. It is a native of Silhet, where it was found by the late Mr. M. R. Smith, and by him sent to Dr. Roxburgh in 1811. The Hindustani and Bengali name is Hathi Khan, or Elephant's Ear, in allusion to the shape and size of its leaves. It produces its elegant white and fragrant flowers in the hot season, during the months of April and May, and ripens its berries in June and July. In the Botanic Garden of Calcutta it thrives luxuriantly. For the foregoing account of this plant we are indebted to the kindness of Dr. Wallich, by whom seeds were sent to Europe. Our drawing was made from a specimen obligingly communicated by the Honourable and Rev. W. Herbert, in November last. In the stove it is a rapid-growing plant, easily known by the dark green colour of its halberd-shaped leaves, which have often a deep stain of purple. It increases freely by cuttings." The fruits, of course, are drupes, not "berries".

Rao & Rabha (1966) also list the species from Assam, while Calderon & Standley (1941) record it as cultivated in El Salvador.

Wallich (1829) based his *Clerodendron sagittatum* on two collections: 1786/1 from Silhet and 1786/2 from the Calcutta Botanical Garden. Later (1831) he corrected the name to *Clerodendron hastatum* Wall. Some authorities claim that, strictly speaking, the binomial should be written "(Roxb.) Wall.", since he gives Roxburgh's still not validly published binomial, *Siphonanthus hastata* (as "hastatus") as a synonym. In this second work he cites a third collection, 1786/C from Gualpara in the Hamilton herbarium.

According to Sweet (1830), the plant we now know as *Clerodendron hastatum* was introduced into English gardens in 1824 from the "E. Indies" --this locale is obviously incorrect since Roxburgh, Wallich, and Lindley all agree that the original collection was from Silhet and from there introduced to Calcutta (whence it was later introduced into the horticultural trade. Syngé (1956) gives "1825" as the original date of its introduction.

Keys to help distinguish this species from some of its allies will be found under *C. bethunianum* Low and *C. griffithianum* C. B. Clarke in the present series of notes (58: 197 and 60: 134 & 136).

The corollas of *Clerodendron hastatum* are described as "white" by Lindley (1830) and on Sengupta 1404, as "greenish-white" by Firminger (1918) and on Koelz 25168, "white-cream" on Koelz 29642, and "creamy-yellow" on Chand 5479.

Vernacular and common names listed for this species are "alta alda", "dieng-kym-bata-ngiang-mong", "halberty-leaved clerodendrum", "hathi khan", "hattee-kama" [=elephant's ear], "martinica", and "misteriosa".

Bakhuizen (1921) cites Roxburgh's *Flora Indica* reference to "1820" but volume 3 of the first printing of edition 2 was issued in 1832.

Citations: INDIA: Assam: *Chand* 5479 (Mi), 5480 (Mi); C. B. Clarke 44033D (L); *Hooker f. & Thomson s.n.* [Mont. Khasia, 2000 ped.] (K, K, K, L, Ld--photo, Ld--photo, Mu--798, N--photo, N--photo, Pd, S); *Goelz* 25168 (Mi), 29642 (Mi); *Native collector s.n.* [Khasia hills] (Mu--800, T); *Simons s.n.* [Assam] (Bz--19371, Bz--19372, L, N, Pd); *Wallich* 1786/1 (L, Pd); *G. Watt* 11684 (Na--12945). West Bengal: *Herb. Hooker s.n.* [Bengal] (K, N). BANGLADESH: *w. Griffith* 6049/1 (L, Mu--801, S). CULTIVATED: Austria: *Herb. Reichenbach f. s.n.* (V). Belgium: *Herb. Hort. Claremont s.n.* (Br); *Herb. Scheidweiler s.n.* [Inst. Gembloux] (Br). England: *Lambert s.n.* [Hort. Boyton 1831] (V, V). France: *Herb. Martius s.n.* [1842] (Br). Germany: *Herb. Hort. Bot. Monac. s.n.* [10.VI.1891] (Mu--3848), *s.n.* [20.VII.03] (Mu); *Lindblad s.n.* (Us). India: *Herb. Hort. Bot. Calcutt. s.n.* (B, Mu--799); *Wallich* 1786/b (K, V, V). Java: *Bakhuizen* 764 (Bz--19370); *Herb. Hort. Bot. Bogor.* XI.G.19 (N), XI.G.55 (Bz--25739), XI.G.58 (Bz--25741, Bz), XI.G.60 (Bz--25743), XI.G.61 (Bz--25744), XI.G.61 en a (Bz--25745, Bz--25746), XI.G.79 (Bz--25788), XI.G.102 (Bz--25800, N), XI.G.105 (Bz--25801, Bz--26535, Bz--26536, Bz, Bz, Bz), XI.G.105a (Bz--25802, Bz--26803, Bz, N), XII.B.VI.22 (Bz--26245, Bz, N), XV.J.A.XXXI.7 (Bz--26378, N), XV.J.A.XXXIII.4 (Bz--26391, N), XV.L.2 (Bz--26478, N), XV.L.3 (Bz--26479), XV.L.4 (Bz--26480, N), XV.L.7 (Bz--26481). Netherlands: *Herb. Lugd.-bat.* 908265-701 (Ld--photo, Le, N, N--photo, S--photo). Russia: *Herb. Fischer s.n.* (L); *Regel s.n.* [Herb. Bot. Petrop. 56.6] (L). Sweden: *Herb. Mus. Bot. Stockh. s.n.* (S). Switzerland: *Reuter s.n.* [Hort. Genev. 1844] (X), *s.n.* [Hort. Genev, 1871] (X). LOCALITY OF COLLECTION UNDETERMINED: *Herb. Braun s.n.* (L). MOUNTED ILLUSTRATIONS: *Lindl., Edwards Bot. Reg.* 16: pl. 1207. 1830 (Ld).

*CLERODENDRUM HENDERSONII* Mold., *Phytologia* 33: 372. 1976.

Bibliography: *Hocking, Excerpt Bot.* A.28: 260. 1976; *Mold., Phytologia* 33: 372 (1976) and 34: 265. 1976; *Mold., Phytol. Mem.* 2: 295 & 537. 1980; *Mold., Phytologia* 58: 460. 1985.

A shrub or small tree, to 5 m. tall; branches and branchlets rather stout, very pithy, usually rather deeply round-sulcate in drying. with longitudinal sulcations, glabrate; leaves decussate-opposite; petioles rather stout, 3.5--5 cm. long, minutely pilosulous or glabrescent; leaf-blades thinly membranous, fragile when dry, deltoid-ovate, 10--15 cm. long, 6--10 cm. wide, apically plainly acuminate, marginally entire, basally truncate, glabrous or subglabrate on both surfaces; inflorescence terminal, cymose, the cymes composed of about 5 opposite ramifications, the 2 central ones often short-stalked, each apically several-brachiate and about 10--12-flowered, the individual flowers very shortly pedicellate; pedicels somewhat dusty-pilosulous; flowering calyx campanulate, nigrescent in drying,



about 7 mm. long, externally glabrous or subglabrous, 5-lobed, the lobes lanceolate-ovate, about 2 mm. long, apically acute; corolla infundibular or hypocrateriform, white, the tube very slender, about 1.3 cm. long, nigrescent in drying, externally glabrous, the limb 5-parted, about 1 cm. wide during full anthesis, glabrous; fruit drupaceous, magenta.

This species is based on *M. R. Henderson 23299* from about 4600 feet altitude on the Cameron Highlands in Pahang, Malaya, collected on April 1, 1930, and deposited in the Britton Herbarium at the New York Botanical Garden. It is apparently closely related to and very similar in appearance to *C. colebrokianum* Walp.

Collectors have encountered *Clerodendrum hendersonii* at 4600--5500 feet altitude, growing along roadsides, in anthesis in April and May.

Citations: MALAYA: Pahang: *Collector undetermined s.n.* [4.5.;964] (K1--8117); *M. R. Henderson 23299* (N--type); *B. C. Stone 5578* (K1--6195).

*CLERODENDRUM HENRYI* P'ei, Mem. Sci. Soc. China 1 (3): 152, pl. 27 [as "*Clerodendron*"]. 1932; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 57 & 90. 1942.

Synonymy: *Clerodendron henryi* P'ei, Mem. Sci. Soc. China 1 (3): 152. 1932.

Bibliography: P'ei, Mem. Sci. Soc. China 1 (3): 125 & 152, pl. 27. 1932; P'ei, Verbenac. China 125 & 152, pl. 27. 1932; P'ei, Sinensia 2: 76. 1932; A. W. Hill, Ind. Kew. Suppl. 9: 68. 1938; Worsdell, Ind. Lond. Suppl. 1: 238. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 57 & 90. 1942; H. N. & A. L. Mold., Pl. Life 2: 64. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 131 & 181. 1949; Mold., Résumé 169 & 450. 1959; Mold., Fifth Summ. 1: 287 (1971) and 2: 866. 1971; Mold., Phytol. Mem. 2: 277 & 537. 1980; Xioang, Act. Bot. Yunn. 3: 62. 1981; Mold., Phytologia 59: 470. 1986.

Illustrations: P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] pl. 27. 1932.

Apparently a shrub or climber; branches and branchlets tetragonal; leaves decussate-opposite; petioles 1.5--4 cm. long; leaf-blades chartaceous, elliptic-lanceolate to oblong, 10--13.5 cm. long, 3--5 cm. wide, apically acuminate, marginally entire and undulate, basally rotundate or rarely acute, glabrous on both surfaces, with a few glands; midrib prominent beneath; secondaries 7 or 8 per side, prominent beneath; inflorescence elongate, composed of racemously arranged thyrsi, about 19 cm. long (in all) and 15 cm. wide, the primary ramifications about 4 cm. long; bracts lanceolate; calyx deeply lobed, glabrous, the tube about 2 mm. long, the lobes ovate, about 5 mm. long, apically acute; corolla hypocrateriform, externally glandular, internally glabrous, 5-lobed, the tube 1.5--1.7 cm. long, the lobes oblong, 9 mm. long and 4 mm. wide; stamens exerted, twice as long as the corolla-tube; filaments glabrous; anthers 2-celled, the thecae parallel; style glabrous; stigma bifid; ovary externally glabrous; fruit drupaceous, about 8 mm. long and wide, greenish.

[to be continued]